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Yoga and Autism: Students' Perspectives on the Get Ready To Learn Yoga Program

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Yoga and Autism: Students' Perspectives on the Get Ready To Learn Yoga Program

Abstract

Background: Yoga, a complementary health approach known for various therapeutic effects, is used with diverse populations, including students ASD. Limited evidence exists inclusive of the first-hand perspective of students with ASD who participate in yoga. The purpose of this study is to understand the perspective of students 10 and 14 years of age with ASD who participated in a portion of the GRTL yoga program as part of a physical education class.

Method: Using a qualitative design, this study examined the student perspective on the GRTL yoga program. A convenience sample of seven male participants between 10 and 14 years of age with ASD, all students at a private school, participated in the study. The participants engaged in the GRTL yoga program for four 45-min sessions and then were interviewed following the final yoga session. Conventional content analysis was used to analyze the participant perspectives as it relates to the GRTL yoga program.

Results: Research team analysis of the transcribed interviews revealed two themes: positive behavioral responses and self-efficacy of kinesthetic recall.

Conclusion: This study demonstrates the use of the GRTL yoga program as it relates to the student perspective and indicates the need for further investigation with the inclusion of the participant voice.

Comments

The authors report that they have no conflicts of interest to disclose.

Keywords

yoga, autism spectrum disorder, students with autism

Cover Page Footnote

We would like to thank our community partner who made this study possible. We would also like to acknowledge the occupational therapy program at Maryville University and the program in occupational therapy at Washington University School of Medicine in St. Louis.

Credentials Display

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The National Center for Complementary and Integrative Medicine (NCCIM), part of the National Institutes of Health (NIH), considers yoga a complementary health approach, meaning it is a “non-mainstream practice . . . used together with conventional medicine” (NCCIM, para 2, n.d.a.). According to the NCCIM (n.d.b.), “Yoga is a mind and body practice with origins in ancient Indian philosophy” typically combining “physical postures, breathing techniques, and medication or relaxation,” and yoga as practiced in the US focuses mainly on postures and breathing exercises (para 1). The 2012 National Health Interview Survey showed that yoga is one of the top four most popular mind and body practices used by adults. From 2002 to 2012, the number of U.S. adults practicing yoga doubled (Clarke, Black, Stussman, Barnes, & Nahin, 2015).

Yoga has various therapeutic effects across multiple populations, and research regarding the effectiveness of yoga as an intervention is growing in popularity. Diagnostic groups of interest include individuals experiencing post-traumatic stress disorder (PTSD), individuals with attention deficit hyperactivity disorder (ADHD), and cancer survivors. For example, Staples, Hamilton, and Uddo (2013) sought to assess the feasibility and effectiveness of a yoga program with veterans living with PTSD. The results of their research showed improvement in symptoms of hyperarousal and that the program was feasible and well-attended. A report on yoga for cancer survivors included the review of 25 published yoga intervention studies from 2004 to 2011, out of which 13 studies met criteria to assess clinical significance in areas including quality of life, psychosocial factors, or symptom measures (Culos-Reed et al., 2012). Hariprasad, Arasappa, Varambally, Srinath, and Gangadhar (2013) examined the use of a yoga program with children with ADHD. The researchers investigated changes in the children’s behavior and the ease of implementation with the population. The outcomes of the study yielded adequate participation by the children and a decrease in severity of ADHD symptoms (Hariprasad, Arasappa, Varambally, Srinath, & Gangadhar, 2013).

Another population of interest in the use of yoga as intervention is individuals with autism spectrum disorder (ASD). Per the Centers for Disease Control and Prevention (CDC), ASD occurs in 1 in every 59 children (n.d.). This number has significantly increased in the past decade, indicating a greater need for intervention for the children and families who are affected. The American Psychiatric Association’s (APA) (2013) *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) criteria includes a variety of characteristics that would support a diagnosis of ASD, which routinely occurs during childhood. The first area of criterion for diagnosis includes persistent deficits in social communication and interaction. This is manifested by an inability to engage in typical conversation patterns, limited eye contact and expression of appropriate emotions, and deficits in maintaining relationships. The second area of criterion includes restricted and repetitive patterns of behavior seen in motor movement, speech, and seeking of rituals and routines. Limitations in sensory processing are also evident through the individual’s hyper or hypo reactivity to differing sensory input (APA, 2013). This combination of characteristics indicates limitations in occupational performance for individuals with ASD.

Based on the nature of these characteristics, engaging in the classroom setting poses some impending challenges for individuals with ASD. Students’ tendencies toward distractibility and their need for consistency in routines, as well as their transitioning deficits and overall inability to regulate behavior, indicate a great need for intervention in classrooms (Koenig, Buckley-Reen, & Garg, 2012). The reauthorization of the Individuals with Disabilities Education Act of 1997 (P.L. 105-117) and the Individuals with Disabilities Education Improvement Act of 2004 (P.L. 108-446) provide the right to a

“free, appropriate public education” (para 4) as well as special education and related services, including occupational therapy, to eligible individuals and recommends implementation of evidence-based intervention practices whenever possible. An occupational therapist would typically be involved in assisting these students with their specialized academic needs and are experts in implementing interventions that can address multi-faceted diagnoses (CDC, n.d.), including the occupational performance of individuals with ASD in a school setting.

A study by Butzer, Ebert, Telles, and Khalsa (2015) found 36 different yoga programs were being offered in 940 schools across the US, indicating such school-based yoga programs are growing in popularity, widely accepted, and feasible to implement. While the school-based yoga programs varied in grade level taught and method of implementation, most shared four common elements: physical postures, breathing exercises, techniques to promote relaxation, and mindfulness/meditation activities. One such program with preliminary peer-reviewed research is the Get Ready To Learn (GRTL) yoga program (Butzer, Ebert, Telles, & Khalsa, 2015). A study was conducted of a 16-week yoga intervention for students 5 to 12 years of age with ASD using the GRTL yoga program, a manualized, daily yoga curriculum that is designed specifically for a classroom setting (Koenig, Buckley-Reen, & Garg, 2012). The GRTL program seeks to improve functional and academic behaviors through yoga postures, breathing exercises, and relaxation techniques. The results indicated a reduction in maladaptive behaviors, including lethargy, irritability, noncompliance, inappropriate speech, and social withdrawal for those students receiving yoga intervention. Changes in behaviors were measured using various assessments, including the Aberrant Behavior Checklist (ABC) - Community (Aman & Singh, 1994) and the Vineland Adaptive Behavior Scales-II (VABS-II) (Sparrow, Cicchetti, & Balla, 2005), which are administered to the students’ teachers and parents, respectively. The outcomes of this study demonstrate that yoga-based programs can be effective with this population and can impact the daily learning and participation occurring in special education classrooms (Koenig, Buckley-Reen, & Garg, 2012).

The GRTL program was created by an occupational therapist and a certified yoga instructor. It focuses on yoga postures, relaxation techniques, and breathing exercises to prepare elementary school-aged children to function optimally during their day in the classroom (Koenig, Buckley-Reen, & Garg, 2012). It has been found to be effective with a variety of children with disabilities, but available evidence supports its use with school-aged children with ASD (GRTL, 2014). Since the program’s beginning in 2008, GRTL has become widely popular in classrooms across the US, Canada, and England, as teachers become trained instructors of the curriculum. The program seeks to reduce stress, enhance classroom performance, and increase the participants’ attention (GRTL, 2014). According to the GRTL website:

Get Ready To Learn (GRTL) is a researched daily preparatory classroom yoga curriculum designed to optimize classroom performance for both students and staff. Introduced into NYC schools in 2008, the program was initially used in classrooms with students with a wide range of developmental and educational challenges (GRTL, n.d.).

These factors, in addition to the growing popularity of yoga as an intervention and the emerging body of literature supporting the effectiveness of yoga and students with ASD, indicate a need for further investigation.

The Person – Environment – Occupation – Performance (PEOP) model served as the researchers’ conceptual framework throughout this study and represents the dynamic interaction

between an individual's person factors and environmental factors, and the impact of this dynamic interaction on one's occupational performance (Baum, Christiansen, & Bass, 2015). Gaining the students' perspectives may help determine if yoga, widely considered a leisure activity, can improve occupational performance and daily participation of engagement in meaningful occupations such as school, work, and self-care. Using the PEOP model as a guiding framework, the researchers sought to study the GRTL yoga program from a qualitative standpoint in order to gain the students' perspectives of the program. The purpose of this study is to understand the perspective of students ages 10 to 14 years with ASD who participated in a portion of the GRTL yoga program as part of a physical education class at their school. By studying the student perspective of the GRTL yoga program, this research aims to contribute to the literature that supports the use of yoga as an effective intervention in the school setting. The research questions our study seeks to answer are:

1. What are students' perspectives of the GRTL yoga program?
2. Do students perceive a therapeutic benefit to the GRTL yoga program?

Method

Design

A qualitative research design was used to examine students' perspectives on the GRTL yoga program at a private school in the Midwest for students with ASD. This method was used to obtain first-hand experiences, including perspectives, feelings, and recall of poses without suggesting a specific response (Portney & Watkins, 2009). Through this method, researchers were allowed to interact directly with the participants, explore what they thought about their experiences, and examine why they thought that way (Kitzinger, 1995).

Participants

Participants were recruited from this study's community partnership with a private school for individuals with ASD, a site where the Principal Investigator (PI) of this study, an occupational therapist and full-time academic, had an established service-based professional relationship. A convenience sample of participants included 7 students, all male, 10 to 14 years of age. To be included in the study, the participants had to have a primary diagnosis of ASD, be enrolled in the physical education class at the community partner site, attend all yoga sessions, have a signed consent form from a parent or legal guardian, and have a signed assent form for participation in the study. Typical characteristics of the participants include poor self-regulation skills, impulsivity, poor attention, and difficulty with transitions, per reports from the teacher and school occupational therapist. Such characteristics are consistent with ASD diagnostic criteria per the DSM-V (APA, 2013). The participants spoke English and communicated verbally. Students were excluded from the study if they were unwilling to participate, did not sign an assent form, and/or did not have signed informed consent from a parent or legal guardian. Students who were enrolled at the school but who were not verbal communicators or required assistive technology to communicate were excluded from the study.

Procedure

Following approval from the university's institutional review board, the research team sent recruitment materials in the form of a letter and a flier, as well as consent and assent materials, to the director of the community partner, who then sent materials home to the parents of qualified potential participants. Graduate occupational therapy student members of the research team, who will be referred to as the research team, trained on the GRTL yoga program by viewing the DVD series and participating in the program in full. A certified yoga instructor was available as a consultant to answer questions and

clarify breathing techniques and poses as needed during the training process. The research team recreated each pose based on the content of the DVD and one member of the research team was photographed in that pose. The printed photograph of the pose was reviewed by the consulting certified yoga instructor. Any photo indicative of an inaccurate pose was retaken and reviewed for approval. Once approved, all photos were labeled with the pose name and laminated in preparation for the study and were intended for use as a visual aid in the event a participant required additional support to participate in the program. The research team was then trained on the interview questions in preparation for data collection. The questions were formulated by the research team to address the students' perspectives of the GRTL yoga program.

The yoga program was implemented as part of the physical education curriculum at the site of this project's community partnership. The GRTL yoga program was administered to the group of participants by trained members of the research team four times with each session lasting approximately 45 min. Because of time constraints and scheduling conflicts, each session was one week apart. At each of the four yoga sessions, a designated member of the research team was present to take handwritten notes on the note-taking forms to collect anecdotal information. Following the fourth yoga session, semi-structured interviews were conducted in a private setting at the school.

The participants were asked a series of questions by a member of the research team, which were audio recorded. Another member of the research team was present to monitor the audio equipment and ensure that it was working properly for the duration of the focus group, as well as to take anecdotal notes as needed on note-taking forms. The participants were informed that participation in the interview was voluntary and that they were able to leave the interview or study at any time without consequence. Additional members of the researcher team, as well as school employees assigned to work with certain students, remained in close proximity to the area of the school where the interviews were conducted in the event a student chose to leave the group and required assistance. Of the seven participants in the yoga program, six completed the interview portion while one participant requested to leave the study.

Data Analysis

Following the interviews, each of the six audio files were transcribed verbatim by a member of the research team. Two members of the research team audited the transcription for accuracy. Once the transcription was verified for accuracy, all audio files were destroyed, as they were no longer needed. Using conventional content analysis (Hsiu-Fang & Shannon, 2005), a qualitative procedure fitting for concept development or model building (Lindkvist, 1981) independent of any theoretical perspective or framework, such as grounded theory or phenomenology (Julien, 2008), categories are derived directly from the data (transcripts) during analysis (Hsiu-Fang & Shannon, 2005). Each member of the research team and the PI independently read the transcription, then read it again to highlight key concepts. Hsiu-Fang and Shannon (2005) assert the advantage of this approach "is gaining direct information from study participants without imposing preconceived categories or theoretical perspectives" (p. 1279-1280). Falling under the broad category of phenomenology, Creswell (2013) explains the use of conventional content analysis to describe participants' experiences of a phenomenon. More specifically, conventional content analysis is most useful when little research exists about the phenomenon (Hsieh & Shannon, 2005), such as in the current study.

Next, each researcher revisited the transcription to make notes regarding initial impressions. Each member of the research team continued to work independently with the text to identify codes throughout the transcript, as well as the frequency at which those codes occurred. The research team

employed investigator triangulation (Rothbauer, 2008) and data saturation (Glaser & Strauss, 1967; Guest, Bunce, & Johnson, 2006; Mason, 2010; Fusch & Ness, 2015), and codes were disseminated and grouped into emergent categories based on how they are related. Emergent categories were clustered, along with associated codes, and groupings may be combined or sub-identified to continue data organization and analysis. Ultimately, the research team concluded that two emerging themes were developed from the data.

Results

In conventional content analysis, definitions are developed and theme-supporting statements are identified from the data (Hsiu-Fang & Shannon, 2005), as reported below. The research team derived two overarching themes based on responses from the participants in the study: positive behavioral responses and self-efficacy of kinesthetic recall.

Theme I: Positive Behavioral Responses

One theme that emerged from the data included positive behavior responses. Typical behaviors associated with ASD may include maladaptive behaviors, such as restricted or repetitive motor patterns and/or expression of appropriate emotions, among other characteristics, as previously mentioned. When asked how yoga made them feel, the participants in the GRTL yoga program expressed words including: “good,” “happy,” “calm,” “relaxed,” “in control,” and “focus.” Overall, the students responded positively to participation in the program, evident by the researchers’ anecdotal notes indicating overall adaptive responses throughout the program, such as the ability to attend to and hold yoga postures and movements, lack of repetitive movements during yoga poses, and self-reported participant statements. Theme I and sample supporting statements are noted in Table 1.

Table 1

Theme I and Supporting Statements

Theme	Participant Statements to Support Theme
Positive behavioral responses	“helps my mind focus.” “I feel calm when I play my guitar ... yoga helps me feel the same as that.” “Yes ... I like it ... so good.” “Yoga was awesome.” “makes me happy.”

Theme II: Self-efficacy of Kinesthetic Recall

Throughout the interviews, the participants identified and demonstrated various yoga poses used throughout the GRTL yoga program, recalling proper body positioning with associated breathing, employing balance and coordination. Bandura (1982) describes self-efficacy as the ability to believe in one’s ability to achieve a goal or deal with a situation. Merriam-Webster (n.d.) defines kinesthesia as, “a sense mediated by receptors located in muscles, tendons, and joints and stimulated by bodily movements and tensions.” The marriage of these two definitions represents this theme derived from the data, and researcher anecdotal notes supported the participants’ notion of pride and achievement while recalling yoga positions and demonstrating learned techniques. Theme II and sample supporting statements are noted in Table 2.

Table 2*Theme II and Supporting Statements*

Theme	Statements to Support Theme
Self-efficacy of kinesthetic recall	<p>“I can practice at home. I do yoga at home.”</p> <p>“the child pose, because it’s my favorite . . . makes me feel calm”</p> <p>“I learned the tree. I learned the tree pose from yoga.”</p> <p>“the downward dog, the warrior, the tree.”</p>

Discussion

The findings of this study indicate overall positive perspectives from the students with ASD who participated in the GRTL yoga program. The participants verbalized the GRTL yoga program was therapeutic in terms of intrinsic behavioral responses (i.e., calming, in control, focus), which was represented in the first theme. The students’ perspectives also revealed that they were able to recall the kinesthetic movement patterns and breathing techniques following participation of the program, a source of pride for most. The participants identified various yoga poses from the program, demonstrating proper body positioning and associated breathing, coordination, and balance needed to engage in each pose.

Both themes are represented in *The Occupational Therapy Practice Framework: Domain and Process* (OTPF-3), Performance Skills, meaning “observable elements of action that have an implicit functional purpose; skills are considered a classification of actions, encompassing multiple capacities (body functions and body structures) and, when combined, underlie the ability to participate in desired occupations and activities” (AOTA, 2017, p. S25). More specifically, Theme I, positive behavioral responses, is reflective of Specific Mental Functions: Emotional: “Regulation and range of emotions; appropriateness of emotions, including anger, love, tension, and anxiety; lability of emotions” (AOTA, 2017, S22).

Theme II is reflective of the OTPF-3 Performance Skills, specifically Motor Skills and Process Skills. The OTPF-3 adopted from Boyt Schell, Gillen, and Scaffa the definition of Motor Skills: “Occupational performance skills observed as the person interacts with and moves task objects and self around the task environment” (e.g., activity of daily living [ADL] motor skills, school motor skills)” (p. S25) and the definition of Process Skills, or “Occupational performance skills [e.g., ADL process skills, school process skills] observed as a person (1) selects, interacts with, and uses task tools and materials; (2) carries out individual actions and steps; and (3) modifies performance when problems are encountered” (p. S25).

The positive responses of the students who participated in the GRTL yoga program suggests this program can be an enjoyable and beneficial activity for students with ASD. This study demonstrated that students with ASD may recall specific yoga positions from this program to possibly implement at home or during class time. It is yet to be determined to what extent therapeutic value includes the impact of yoga on occupational performance of individuals with ASD, and to what extent yoga intervention would have on the occupational performance of a student with ASD in an educational setting. Occupational therapists and other professionals who work with this population can use these findings to consider the use of yoga programs, including the GRTL yoga program, as interventions for individuals with ASD.

The perspectives captured from this study provide a unique viewpoint into the ASD student population that other studies have not been able to obtain. Koenig et al. (2012) used the GRTL yoga program in a classroom for students, ages 5 to 12 years of age, and explored how the program could improve behaviors in students. This study differs yet compliments other research because it aimed to look at the perspectives of students themselves that engaged in the GRTL yoga program through qualitative research design. The study provides an understanding of students' thoughts and feelings on the GRTL yoga program. The students' voices are heard through this study, creating a distinct perspective for researchers and professionals interested in this population and intervention.

Limitations

Adherence to use of the GRTL yoga program as a daily program, although the original intent of the research team, was not possible to because of time constraints and scheduling of both the community partner and the research team. For maximum benefit and adherence to the manual of the GRTL program, it is recommended the protocol be integrated daily into a student's school day. The number of participants in this study was limited because of the use of a convenience sample from a private school for students with ASD. This study did not use random sampling, which limited our sample in size, age, and gender. However, because of the populations' unique needs, a limited number of participants for the yoga program was beneficial in order to accommodate the students' needs, whether person-based or environment-based. Generalization of this study's findings is limited to the setting and population used and may not be a true representation of all students with ASD of the same age and beyond, nor is it a true representation of the maximum benefit of GRTL. These results are a preliminary effort designed to further investigate the perspectives of students with ASD who engage in the GRTL yoga program. It is of utmost importance to note that this study did not acknowledge the role of the environment on the results, which is further explained below.

Implications for Occupational Therapy Practice

The American Occupational Therapy Association (AOTA) *Fact Sheet on the Role of Occupational Therapy with Children and Youth* promotes occupational therapy's work with children and youth in educational settings. Regarding the role of occupational therapy in these settings, AOTA states, "students in preschool, and elementary, middle, and high school to support successful learning, appropriate behavior, and participation in daily routines and activities" (AOTA, 2015, p. 2). AOTA adds that occupational therapists possess the "training in psychosocial and mental health conditions and are well suited to address children's emotional and behavioral needs as they relate to everyday activities and social interactions" (AOTA, 2015, p. 2). Occupational therapists can use yoga programs as a viable intervention option and have the opportunity to provide organization-wide education and programming, as well as conduct additional studies, in support of such programs in environmental settings.

Future Research

This study warrants future research to examine the use of the GRTL yoga program in other populations, including expanded age ranges of children with ASD and other diagnoses, such as ADHD. Future research should use a mixed-methods approach to analyze the GRTL yoga program as an intervention method. This approach will obtain both qualitative and quantitative data to explore a holistic view of the physical, cognitive, psychological, and other potential benefits of the yoga program to the participant. It is also vital to explore yoga as an intervention approach and the potential resulting impact on the occupational performance of participants, specifically, occupational performance in the school environment. Occupational therapists should consider including as part of a study on yoga as an

intervention additional school personnel that have direct contact with students with ASD, as well as parents. In addition, future research should conduct focus groups with a larger sample of students with ASD or similar diagnoses. It would be beneficial to use a one-on-one interview approach for these larger samples in order to improve the attention and responses of students when they answer the questions. Consideration of the environment, a significant component of the PEO, is essential in future studies of programs such as GRTL. The nature of a yoga-based environment is one that promotes sensory-calming strategies, including elimination of noxious stimuli and low lighting. Future studies must consider the influence of the environment on occupational performance in combination with or in isolation of the intervention of yoga itself.

Conclusion

Occupational therapists play a vital role in the school environment on educational teams and have the ability to implement and study the outcomes of new, innovative, evidence-based programs that result in improved occupational performance of children and youth, including individuals with ASD. Capturing students' voices regarding engagement in programs, such as GRTL, in addition to quantitative measures of occupational performance and supporting components, is a necessary addition to the evidence supporting its use.

Dr. Lauren Milton is a faculty member in the program in occupational therapy at Washington University School of Medicine in St. Louis. Dr. Milton's clinical expertise is in early intervention and school-based practice. She teaches a variety of courses and mentors master and doctoral students through the research process. Research projects range from topics related to the occupational performance of children and youth to the scholarship of teaching and learning. Dr. Milton also serves as the program's student activities coordinator.

Selena Bantel is a graduate of Maryville University in St. Louis, MO. She began her career working in the St. Louis special school district, then transitioned to a role in inpatient rehabilitation at SSM Rehabilitation Hospital in Bridgeton, MO, where she works with individuals with stroke, brain injury, cardiac conditions, and spinal cord injuries.

KayeLee (Ridings) Calmer is a graduate of Maryville University in St. Louis, MO. KayeLee has worked in acute care, skilled nursing, and outpatient settings. In her current practice, KayeLee incorporates knowledge of the benefits of yoga to address occupational performance deficits in her clients.

Marlee Friedman is a graduate of Maryville University in St. Louis, MO. She currently works in a school-based setting in DeSoto, MO, as a contract therapist with AbilityNetwork. Marlee has specialized training in the areas of yoga and mindfulness, bilateral coordination and visual integration (Bal-A-Viz-Ex program), and handwriting (Learning Without Tears program).

Elizabeth (Kehoe) Haley is a graduate of Maryville University in St. Louis, MO. She is an occupational therapist at Mercy Kids Development and Autism Center where she provides therapy services to children 0 to 12 years of age with a wide range of diagnosis. She serves on the feeding team at Mercy Kids and is a First Steps provider in Missouri.

Lauren (Iverson) Rubarts is a graduate of Maryville University in St. Louis, MO. She currently works as an occupational therapist with children and youth in both outpatient and school-based settings. She is affiliated with Carle Foundation Hospital and Carle Auditory Oral School, both in Urbana, IL. Lauren is also a certified early intervention provider in Illinois.

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